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Claim Rejections Under 35 USC § 103

On page 2 of the Office Action, the Examiner rejected Claims 12-16 under 35 USC §103 as being unpatentable over Ito et al in view of Wachi et al. On page 5 of the Office Action Claims 1-7 and 9-11 were rejected under Ito et al. in view of Andersen et al. and Wachi et al.

Independent Claims 1, 7, and 12 include claim elements directed to an oxygen sensor having a discrete on and off output. Ito et al., Wachi et al., and Andersen et al. are silent with respect to a discrete switching oxygen sensor. The Examiner has cited element 15 of Ito et al. as a discrete oxygen sensor. Applicants object to this characterization, as element 15 is not described as a switching oxygen sensor. In column 3, line 64 through column 4, line 8 the oxygen concentration sensors 15 and 16 are described as "detecting the concentration of oxygen present in the exhaust gases". There is no explanation of how the oxygen sensors 15 and 16 detect oxygen or the type of signal that they generate. Applicants will not postulate as to how the oxygen sensors 15 and 16 operate but assert that Ito et al. is clearly silent with respect to a switching oxygen sensor. Switching oxygen sensors (oxygen sensors having an on and off - 1 and 0 output), as claimed in the present invention, provide significant cost benefit as complex electronic analog to digital circuitry is not required to interpret the oxygen sensor output. The Examiner speculates that Figure 9 of Ito et al. indicates that the oxygen sensors 15 and 16 have discrete outputs. Applicants object to the speculation, as there would be numerous explanations for the waveforms of Figure 9, such as the discrete operation of the cylinders of the engine (exhaust is one stage of a four cycle engine and occurs at discrete points in time as do injections of fuel). The cited art does not teach or suggest the present invention.

If the Examiner relies on personal knowledge that the operation of the apparatus of the present invention is obvious in light of the cited art, Applicants respectfully request support for this assertion in the form of an affidavit that shall be subject to contradiction or explanation by the affidavits of the Applicant and other persons under 37 C.F.R. 1.104 (d)(2).

Conclusion

The entire Office Action dated April 5, 2006 has been carefully reviewed, and this response is submitted as being fully responsive thereto. In view of the preceding remarks, Applicants respectfully submit that Claims 1-7 and 9-17 are in condition for allowance and

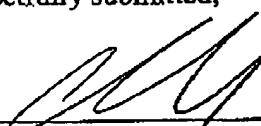
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respectfully request such action at the Examiner's earliest convenience. If the Examiner believes that personal contact would be advantageous to the disposition of this case, he is requested to call the undersigned at his earliest convenience.

If for some reason a fee needs to be paid, as well as two-month extension fee please charge Deposit Account No. 07-0960 for the fees, which may be due.

Respectfully submitted,


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